

**REMARKS****Overview**

Claims 1-9 and 11-15 are pending in this application. The present response is an earnest effort to secure immediate allowance of all pending claims. Reconsideration and passage to issuance is therefore respectfully requested.

**Issues Under 35 U.S.C. § 103(a)**

The Examiner has rejected claims 1-9 and 11-15 under 35 U.S.C. § 103(a) as being obvious over U. S. Patent No. 4,677,413 to Zandman in view of U. S. Patent No. 6,404,324 to Witt et al (Office Action, p. 2, numbered paragraph 2). These rejections are respectfully traversed.

The Examiner uses U. S. Patent No. 4,677,413 to Zandman as the primary reference. First, as the Examiner recognizes, Zandman does not disclose foils on both sides of the substrate (Office Action, p. 2, numbered paragraph). Because Zandman does not disclose foils on both sides of the substrate, there are actually a number of structural limitations missing from Zandman. Thus, not only does Zandman not disclose a second resistive foil, Zandman does not disclose that this second resistive foil is cemented to the substrate, nor does Zandman disclose that the second resistive foil is connected to the first resistive foil, nor does Zandman disclose that the first and second resistive foil have approximately equal resistance values, nor does Zandman disclose that the first and second resistive foils have approximately equal temperature gradients across the substrate.

In order to plug the gaps left by Zandman, the Examiner relies upon Witt, indicating that "Witt discloses resistors on both sides of the [sic] substrate in order to minimize bending so as to handle more power." The Examiner also indicates that "Zandman [sic] discloses putting structures on the opposite side of the substrate in order to minimize bending in order to handle power also, see col. 2, lines 2-20, col. 5, lines 46-67, so that placing another equal resistor type on the other side would have been obvious" (Office Action, p. 3). It is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness based on these references.

The object of Zandman is to provide a precision power resistor which exhibits a temperature coefficient of resistance which is independent of time and power within the resistor's power handling capability (col. 3, lines 16-20). Thus, Zandman is not concerned with handling more power, but is content to remain within the resistor's power handling capability. In order to accomplish its object, Zandman selects the resistivity versus temperature characteristics of the foil so as to compensate for the strain induced change in resistance which results when the temperature of the assembly changes, and selects the substrate to have an essentially zero coefficient of thermal expansion (Abstract).

The Examiner's statement that "Zandman [sic] discloses putting structures on the opposite side of the substrate in order to minimize bending in order to handle power also" citing to col. 2, lines 2-20, col. 5, lines 46-67 is not correct.

Col. 5, lines 48-62 state:

Of course, the power resistor 1 must be constructed extremely carefully so as not to induce resistance changes resulting from external stresses, encapsulation coatings, pulling/twisting/bending of the resistor leads, or the like. Moreover, it is extremely important that the power resistor 1 be constructed with extreme care concerning symmetry. For example, in the event that the power resistor 1 makes use of a metallic

substrate 3, and uses an insulating substrate 8 to ameliorate the effects of capacitance, it is important that a compensating substrate 9 be applied to the opposite side of the substrate 3 to avoid unacceptable bending resulting from differences in the coefficients of thermal expansion of the insulating substrate and the metallic substrate to which it is applied."

When read in proper context, Zandman merely discloses that where an insulating substrate is used in addition to a metal substrate, bending may result due to differences in the coefficients of thermal expansion of the insulating substrate and the metal substrate. Thus, a second insulating substrate can be used to offset bending caused by the first insulating substrate. Zandman does not disclose that the second insulating substrate is used to handle power. Nor does Zandman disclose using a second resistive element. Moreover, the disclosure that the Examiner relies upon is directed to an embodiment of Zandman where the substrate is a metallic substrate—and the claimed invention requires "an insulating substrate." Thus, the Examiner has not cited a proper motivation or suggestion to modify Zandman or any convincing line of reasoning to modify Zandman. Therefore, it is respectfully submitted that this rejection must be withdrawn.

Neither reference relied upon by the Examiner recognizes or solves the problem addressed by the claimed invention and it is not clear that the Examiner has properly considered these differences. "The discovery of a problem calling for an improvement is often a very essential element in an invention correcting such a problem. Though the problem, once realized, may be solved by use of old and known elements, this does not necessarily negate patentability." *In re Bisley*, 197 F.2d 355, 94 U.S.P.Q. 80, 86 (C.C.P.A. 1952); "The problem solved by the invention is always relevant." *In re Wright*, 838, F.2d 1216, 6 U.S.P.Q.2d 1959, 1961 (Fed. Cir. 1988).

Here, the problem being solved is to reduce resistance change due to power. The problem is clearly articulated in the claims and independent claims 1 and 14 make clear that the claimed resistor provides "a cumulative effect of reduction of resistance change due to power."

U. S. Patent No. 4,677,413 to Zandman et al. discloses a precision power resistor with low temperature coefficient of resistance (Abstract). Zandman is concerned with selecting the resistivity versus temperature characteristics of the foil so as to compensate for the strain induced change in resistance which results when the temperature of the assembly changes, and selecting the substrate to have an essentially zero coefficient of thermal expansion. Zandman is not directed to providing a cumulative effect of reduction of resistance change due to power which is evidenced in that Zandman discloses that if power increases the substrate will not change dimensions (col. 3, lines 45-47). Thus, Zandman does not appreciate the cumulative effect of reduction of resistance change due to power, but teaches merely minimizing thermal expansion by selecting the substrate to have an essentially zero thermal expansion.

Witt discloses a resistor suitable for withstanding short duration, high-wattage power surges (Abstract). Witt has a substrate of steel or other metal core in combination with insulating layers. Witt avoids thermal bending of the resistive component due to thermal expansion by offsetting differential thermal expansion at one of the substrate's insulating layers by thermal bending due to differential thermal expansion at the other insulating layer (col. 2, lines 49-56).

Thus, neither Zandman nor Witt are directed towards the problem of reducing resistance change due to power. Thus, it is respectfully submitted that this makes the prior art cited remote and the invention patentable.

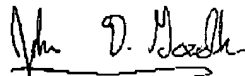
Thus, there are significant structural differences between Zandman and Witt, independently in the claimed invention. Moreover, there is not proper motivation or suggestion

to combine these references in a manner suggested by the Examiner to yield the Applicant's claimed invention because Zandman and Witt are directed towards different problems than what is claimed. The Examiner has failed to set forth any convincing line of reasoning for combining the references.

Therefore, it is respectfully submitted all claims are in proper form for immediate allowance. Reconsideration and passage to issuance is therefore respectfully requested.

No fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Respectfully submitted,



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